

No.

8400086



# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

University of Nebraska and ARS-USDA

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, (THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM,) TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

(*Waived, except that this waiver shall not apply to breeder seed, foundation seed, labeling requirements, and blending limitations.*)

WHEAT

'Centura'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D. C. this 31st day of December in the year of our Lord one thousand nine hundred and eighty-six.

Attest:

*Kenneth H. Evans*  
Commissioner  
Plant Variety Protection Office  
Agricultural Marketing Service

*Richard E. Lyng*  
Secretary of Agriculture

UNITED STATES DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE  
LIVESTOCK, POULTRY, GRAIN & SEED DIVISION

FORM APPROVED  
OMB NO. 40-R3822

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

INSTRUCTIONS: See Reverse.

No certificate for plant variety protection may be issued unless a completed application form has been received (5 U.S.C. 553).

1a. TEMPORARY DESIGNATION OF VARIETY NE77682		1b. VARIETY NAME Centura		FOR OFFICIAL USE ONLY PV NUMBER 8400086	
2. KIND NAME Hard Red Winter Wheat		3. GENUS AND SPECIES NAME <u>Triticum aestivum</u> L.		FILING DATE 3/21/84	TIME 2:30 P.M.
4. FAMILY NAME (BOTANICAL) Gramineae		5. DATE OF DETERMINATION July 1977		FEE RECEIVED \$ 1,800 \$ 2,00.00	DATE 3/21/84 November 19, 1986
6. NAME OF APPLICANT(S) Board of Regents, Univ. of Nebraska, and USDA/Agric. Research Service		7. ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code) Lincoln, Nebraska 68508 and Washington, DC		8. TELEPHONE AREA CODE AND NUMBER 402/472-7211 202/447-3656	
9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: (Corporation, partnership, association, etc.) Corporation and U.S. Government Agency		10. IF INCORPORATED, GIVE STATE AND DATE OF INCORPORATION Nebraska and Washington, DC		11. DATE OF INCORPORATION	
12. NAME AND MAILING ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS: Dr. I. T. Omtvedt, Dean & Director Nebraska Agric. Exp. Stn., Univ. of Nebraska Lincoln, NE 68583 Dr. T. B. Kinney Jr., Administrator USDA/ARS, Room 302A, Adm. Bldg. Washington, DC 20250					
13. CHECK BOX BELOW FOR EACH ATTACHMENT SUBMITTED:					
<input checked="" type="checkbox"/> 13A. Exhibit A, Origin and Breeding History of the Variety (See Section 52 of the Plant Variety Protection Act.)					
<input checked="" type="checkbox"/> 13B. Exhibit B, Novelty Statement.					
<input checked="" type="checkbox"/> 13C. Exhibit C, Objective Description of the Variety (Request form from Plant Variety Protection Office.)					
<input checked="" type="checkbox"/> 13D. Exhibit D, Additional Description of the Variety.					
<input checked="" type="checkbox"/> E Statement of Applicant's Ownership					
14a. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See Section 83(a). (If "Yes," answer 14B and 14C below.) <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO					
14b. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		14c. IF "YES," TO 14B, HOW MANY GENERATIONS OF PRODUCTION BEYOND BREEDER SEED? <input checked="" type="checkbox"/> FOUNDATION <input checked="" type="checkbox"/> REGISTERED <input checked="" type="checkbox"/> CERTIFIED			
15a. DID THE APPLICANT(S) FILE FOR PROTECTION OF THIS VARIETY IN OTHER COUNTRIES? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO (If "Yes," give name of countries and dates.)					
15b. HAVE RIGHTS BEEN GRANTED THIS VARIETY IN OTHER COUNTRIES? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO (If "Yes," give name of countries and dates.)					

16. DOES THE APPLICANT(S) AGREE TO THE PUBLICATION OF HIS/HER (THEIR) NAME(S) AND ADDRESS IN THE OFFICIAL JOURNAL? ☒ YES ☐ NO

17. The applicant(s) declare(s) that a viable sample of basic seed of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

February 17, 1984

(DATE)

MAR 15 1984

(DATE)

T. B. KINNEY, JR.  
Administrator, ARS

SIGNATURE OF APPLICANT

John W. Goebel  
Vice Chancellor for Business & Finance

(SIGNATURE OF APPLICANT)

FOR THE BOARD OF REGENTS - UNIVERSITY OF NEBRASKA

## EXHIBIT A

## Origin and Breeding History of Centura

Pedigree: Warrior\*5/Agent//NE68457/3/Centurk 78

Warrior\*5/Agent is CO68F6635. NE68457 is Ponca/2\*Cheyenne/3/  
(Illinois No. 1//Chinese\*2/Triticum timopheevii) (Cheyenne/Tenmarq/  
Mediterranean/Hope)//Sando 60

Date of Cross: Cross 71687, 1971

Place: Department of Agronomy, Nebraska Agricultural Experiment Station,  
Lincoln, Nebraska

Breeding System: Mass-pedigree

The breeding history of Centura is summarized in Table 1. The decision to release NE77682 under the name CENTURA was made by the Nebraska Agricultural Experiment Station on January 20, 1983. Public release of information on Centura as a cultivar occurred on June 15, 1983\*. The release was cooperative with the North Central Region, Agricultural Research Service, U.S. Department of Agriculture.

Breeder seed (about 60 bushels) of NE77682 was seeded in the fall of 1982 for production of foundation seed. In 1983, the Nebraska Foundation Seed Division produced 2062 bushels of Centura. Of this, 2000 bushels were allocated to Nebraska certified seed growers for production of registered seed in 1984. Sixty-two bushels of breeder seed were retained for production of foundation seed in 1984.

No obvious off-types notes.

\* Release statements attached.

## EXHIBIT A

Table 1. Breeding history of Centura hard red winter wheat.

Year	Generation	Nursery	Disposition
1971	F <sub>0</sub>	Cross 71687 made in greenhouse, Lincoln, NE.	To greenhouse for F <sub>1</sub> seed production.
1972	F <sub>1</sub>	Greenhouse.	Advance to F <sub>2</sub> bulk-hybrid nursery.
1973	F <sub>2</sub>	Bulk hybrid, Mead, NE.	Advanced to F <sub>3</sub> bulk-hybrid nursery.
1974	F <sub>3</sub>	Bulk hybrid, Mead, NE.	Heads selected and advanced to head-row nursery.
1975	F <sub>4</sub>	Head-row nursery.	Rows selected and advanced to preliminary observation nursery at Mead, NE.
1976	F <sub>5</sub>	Observation nursery.	Line selected and advanced to observation nursery grown at multiple stations.
1977	F <sub>6</sub>	Multiple-station observation nursery.	Plot 682 recognized as having merit and assigned NE Number 77682. Advanced to Nebraska Triplicate Yield Nursery.
1978	F <sub>7</sub>	Nebraska Triplicate Yield Nursery (all stations).	Advanced to Nebraska Intrastate Yield Nursery.
1979	F <sub>8</sub>	Nebraska Intrastate Yield Nursery (NIN).	Continued in NIN.
1980	F <sub>9</sub>	Nebraska Intrastate Yield Nursery (NIN).	Continued in NIN. Advanced to Southern Regional Performance Nursery (SRPN) and Nebraska Outstate Tests to Small Scale Milling & Baking Evaluation.
1981	F <sub>10</sub>	Nebraska Intrastate Yield Nursery, SRPN, and Nebraska Outstate Tests.	Continued in tests. Seeded for Large Scale Milling & Baking Evaluation. Breeder seed increase.

Exhibit A - Table 1 (concluded).

Year	Generation	Nursery	Disposition
1982	F <sub>11</sub>	Continued in tests. Breeder seed production.	Continued in tests. To foundation seed increase. To Northern Regional Performance Nursery (NRPN).
1983	F <sub>12</sub>	Nebraska Intrastate Yield Nursery, SRPN and NRPN. Foundation seed increases.	PI No. 476974 assigned. Released as Centura on June 15, 1983, to growers.

NEBRASKA AGRICULTURAL EXPERIMENT STATION  
UNIVERSITY OF NEBRASKA-LINCOLN  
DEPARTMENT OF AGRONOMY

'CENTURA' HARD RED WINTER WHEAT

History

Centura (PI ) is an increase of a hard red winter wheat  $F_2$ -derived line from cross 687, Warrior \*5/Agent//NE68457/3/Centurk 78 made in 1971. Warrior \*5/Agent is C068F6635. NE68457 is Ponca/2\*Cheyenne/3/(Illinois No. 1//Chinese\*2/Triticum timopheevii)/(Cheyenne/Tenmarq/Mediterranean/Hope)//Sando 60. Centura was identified as a line in 1977 and tested as NE77682 in Nebraska yield nurseries starting in 1978 and in the Southern Regional Performance Nursery in 1981 and 1982.

Contributions

Centura was developed through cooperative research of the Nebraska Agricultural Experiment Station and the North Central Region, Agricultural Research Service, U.S. Department of Agriculture. The research was supported in part by grants from the Nebraska Wheat Development, Utilization and Marketing Board. J. W. Schmidt, V. A. Johnson (USDA/ARS), P. J. Mattern and A. F. Dreier of the Department of Agronomy, and R. Elmore, P. T. Nordquist, P. H. Grabowski, I. A. Nelson and C. R. Fenster of the outstate stations identified the agronomic and quality characteristics of this cultivar. D. V. McVey and J. H. Hatchett (USDA/ARS) evaluated this cultivar for rust and Hessian fly reaction, respectively. K. F. Finney (USDA/ARS) and A. B. Ward, Kansas State University, aided in the quality evaluations.

Recommendation

Centura is suggested as a replacement for Centurk 78 throughout Nebraska. It has been consistently more productive than Centurk 78 in Nebraska yield tests.

Description

Centura is an awned, white glumed cultivar. It is similar in appearance and height to Centurk 78 except that the spike has a tendency toward square-headedness. It is between Scout 66 and Centurk 78 in maturity. Centura has better bushel weight and kernel weight than Centurk 78. They are similar in straw strength.

Centura is intermediate in field reaction to mildew, soilborne mosaic and wheat streak viruses, stem rust and Hessian fly. Because it carries the LR24-SR24 rust resistance genes, it has had less leaf rust in field tests and a moderately resistant seedling reaction to more physiological forms of stem rust than Centurk 78.

The bread baking properties of Centura are similar to those of Centurk 78 with strong dough characteristics as measured by the mixograph. It is similar to Centurk 78 in grain protein content but somewhat higher in flour yield.

Seed Availability

Foundation seed of Centura is being produced in 1983 by the Nebraska Foundation Seed Division and should be available to eligible certified seed growers after the 1983 harvest.

Seed Classes

Seed classes of Centura designated by the Nebraska Agricultural Experiment Station will be breeder, foundation, registered and certified. Centura will be submitted for registration and plant variety protection under P.L. 91-577 with the certification option.

Cultivar Release Information

Informational publicity pertaining to the Centura cultivar may be released on June 15, 1983.

Approval:

\_\_\_\_\_  
Head, Department of Agronomy

\_\_\_\_\_  
(date)

\_\_\_\_\_  
Head, Department of Entomology

\_\_\_\_\_  
(date)

\_\_\_\_\_  
Head, Department of Plant Pathology

\_\_\_\_\_  
(date)

\_\_\_\_\_  
Director, Nebraska Agricultural Experiment Station

\_\_\_\_\_  
(date)

NEBRASKA AGRICULTURAL EXPERIMENT STATION  
UNIVERSITY OF NEBRASKA-LINCOLN  
LINCOLN, NEBRASKA

and

UNITED STATES DEPARTMENT OF AGRICULTURE  
AGRICULTURAL RESEARCH SERVICE  
NORTH CENTRAL REGION  
WASHINGTON, DC

RELEASE OF 'CENTURA' (P.I. 476974) HARD RED WINTER WHEAT

The Nebraska Agricultural Experiment Station and the North Central Region, Agricultural Research Service, U.S. Department of Agriculture agree to release a new hard red winter wheat cultivar to certified growers. P.I. 476974, known also as NE77682, will be released as 'Centura'. Centura was developed cooperatively by the Nebraska Agricultural Experiment Station and the North Central Region, Agricultural Research Service, U.S. Department of Agriculture. The development was supported in part by grants from the Nebraska Wheat Development, Utilization and Marketing Board.

Centura is an increase of a hard red winter wheat  $F_3$ -derived line from the 1971 cross 687, Warrior\*5/Agent (CO68P6635)//NE68457/3/Centurk<sup>3</sup> Selection. Centurk Selection was later named Centurk 78. NE68457 is Ponca/2\*Cheyenne/3/(Illinois No. 1//Chinese\*2/Triticum timopheevii)/(Cheyenne/Tenmarq/Mediterranean/Hope)//Sando 60. Centura was identified as a line in 1977 and tested as NE77682 in Nebraska yield tests beginning in 1978, in the Southern Regional Performance Nursery in 1981-1983 and in the Northern Regional Performance Nursery in 1983.

Centura is an awned, white-glumed cultivar similar in appearance and height to Centurk 78 except that the spike has a tendency toward squareheadedness. It is between Scout 66 and Centurk 78 in maturity. Centura has better bushel weight and kernel weight than Centurk 78, but they are similar in straw strength. Centura has been more productive than Centurk 78.

Centura is intermediate in field reaction to mildew, soilborne mosaic and wheat streak viruses and stem rust and intermediate to susceptible in reaction to the Great Plains Hessian fly biotype in greenhouse tests. Because it has the LR24-SR24 rust resistance genes, it has had less leaf rust in field tests and a moderately resistant seedling reaction to more physiological forms of stem rust than Centurk 78.

The bread baking properties of Centura are similar to those of Centurk 78 with strong dough characteristics as measured by the mixograph. It is similar to Centurk 78 in grain protein content but somewhat higher in flour yield.

Breeder seed of Centura will be maintained by the Nebraska Agricultural Experiment Station. Foundation seed will be available from the Foundation Seed Division, Department of Agronomy, University of Nebraska-Lincoln, Lincoln, NE 68583.

The U.S. Department of Agriculture will not have seed for distribution.

Centura will be submitted for registration and variety protection under P.L. 91-577 with the certification option.

The proposed release date is June 15, 1983. Each agency involved in this agreement may make news releases it considers appropriate on or after that release date.

*Levin T. Conforti*

Director, Nebraska Agricultural Experiment Station  
Lincoln, Nebraska

*4/18/83*

(date)

*T. B. Kinnear*

Administrator, Agricultural Research Service,  
U.S. Department of Agriculture, Washington, DC

*5/3/83*

(date)

MAR 21 1984

## EXHIBIT B

## Novelty Statement for Centura

The Centura cultivar is most similar to Centurk 78, one of its parents, but can be distinguished from Centurk 78 in the field by its spike shape. Spikes of Centura have a tendency toward square-headedness not seen in Centurk 78. Most hard red winter wheats have a tapering spike. The Lancota cultivar may also show this tendency toward square-headedness. This trait is environmentally influenced but is usually evident enough to serve as a distinguishing characteristic.

## Other characteristics of Centura:

1. Awned, hard red winter wheat.
2. Considerably better lodging resistance than Centurk 78.
3. Similar to or slightly shorter than Centurk 78 in plant height.
4. Earlier in maturity than Centurk 78 (approaches Scout 66 in earliness).
5. Similar to Sage in leaf rust reaction.
6. Similar to or slightly more resistant to stem rust than Centurk 78. \*
7. Intermediate in reaction to mildew, soilborne and wheat streak mosaic viruses and Hessian fly.
8. Similar to Centurk 78 in dough handling properties but dough mixing time may not be quite as long.
9. Superior to Centurk in 1000-kernel weight and slightly superior in bushel weight.

Additional data are presented in Table 2, Exhibit D.

\* 'CENTURA' IS MODERATELY RESISTANT TO STEM RUST  
RACE RKQS WHEREAS 'CENTURK 78' IS SUSCEPTIBLE.

East  
retyped dated  
3/26/86.

WHEAT PLANT VARIETY PROTECTION  
APPLICATION No. 8400086 'CENTURA'

Addenda

Exhibit A:

'Centura' is very uniform and stable in field appearance. An occasional tall plant, less than 1 in 10,000, has been reported by the inspectors of the Nebraska Crop Improvement Association.

Exhibit B:

A. Differences between Centura and Centurk 78 in 1000 kernel weight and number of seeds per pound in Nebraska Outstate Tests are consistent over environments (years).

Year	<u>Centura</u>		<u>Centurk 78</u>	
	<u>1000 KW.g.</u>	<u>No. Seeds/pound</u>	<u>1000 KW.g.</u>	<u>No. Seeds/pound</u>
1981 (13 tests)	37.8	12,000	35.8	12,230
1982 (13 tests)	30.2	15,220	28.2	16,090
1983 (12 tests)	28.9	15,700	25.7	17,650
1984 (10 tests)	28.0	16,200	26.2	17,310
1985 (10 tests)	<u>28.9</u>	<u>15,700</u>	<u>26.3</u>	<u>17,250</u>
Av. 58 tests)	30.8	14,964	28.4	16,106

B. Differences between Centura and Centurk 78 for bloom dates.

Bloom dates from May 1 (1981-1985)

Year	<u>Centura</u>	<u>Centurk 78</u>	<u>Centura deviation from Centurk 78</u>
1981	24	25	-1
(3 tests)	24	25	-1
	32	33	-1
1982	33	33	0
	39	39	0
	44	45	-1
1983	45	46	-1
	37	38	-1
	38	39	-1
1984	No data, winter kill		
1985	23	24	-1
(2 tests)	<u>25</u>	<u>25</u>	0
11 tests	33.1	33.8	

C. Differences in stem rust genes (SR) - The main difference is that Centura has SR24 while Centurk 78 does not. This can be tested for in the seedling stage. See seedling reaction table for Centurk 78 in 1976 Hard Red Winter Wheat Report and for Centura in the 1981 Hard Red Winter Wheat Report.

Quality Data Reported for Centura in the 1981 Hard Red Winter Wheat Report:

Quality Data (Centura)

Representative data for grain protein content (Nebraska Outstate Tests) and milling and baking quality data provided by the Hard Winter Wheat Quality Laboratory, U.S. Grain Marketing Research Laboratory, Manhattan, Kansas characterize Centura as having satisfactory (strong gluten) hard red winter wheat milling and baking quality.

Grain Protein Content of Selected Cultivars from Nebraska Out-State Tests

<u>Cultivar</u>	<u>Grain Protein Content (%)</u>			
	<u>Years and No. of Tests</u>			
	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>
	(13 tests)	(13 tests)	(12 tests)	(10 tests)
Scout 66	12.0	12.1	12.1	12.0
Brule	11.0	10.9	11.0	11.2
Buckskin	11.5	--	11.7	11.8
Centurk 78	11.4	11.8	12.0	11.7
Centura	11.8	12.1	11.8	12.2
Colt	12.0	11.9	--	11.8
Siouxland	--	11.4	12.4	11.8

12

Data provided by D. V. McVey, Cereal Rust Laboratory, ARS, University of Minnesota, St. Paul, Minnesota.

8400086

Seedling Reaction of the 1981 Uniform Southern Hard Red Winter Wheat Performance Nursery to *Puccinia graminis* f. sp. *tritici* (by D. V. McVey, Cereal Rust Laboratory, ARS, USDA, University of Minnesota, St. Paul, MN).

Entry Cultivar No. or sel.		Reaction produced by isolates							Speculative Sr gene
		74-4-1A	72-21-1409	69-21-399	72-00-1370	72-00-53A	74-14-504C	72-25-639C	
		15B-2		151		11-32-113			
		TNMH	TNMK	QSHS	QFBS	RTQQ	RPQQ	RKQS	
1.	Kharkof	S	S	2,S	2+	S	S	S	17
2.	Scout 66	..	S	S	S	:1	..	S	17,24
3.	Sage	..	2	2	2	:1-	..	2	6,17
4.	NE 74649	..	..	S	..	..	..	S	6,9a,17
5.	NE 75424	..	..	2	0;	:1,2	..	2,S	6,17 (24)
6.	NE 77682 (CENTURA)	..	..	2	0;	..	..	2	24 & or 31
7.	NE 78668	2-	2-	2	2-	2	2	2-	
8.	KS 75210	S	S	S	S	S	S	S	
9.	KS 79H70	..	..	0	2=	0:,2	..	-	6,Tt-1,24
10.	KS 79H69	..	..	0	:2=	2	..	2	6,Tt-1,24
11.	OK 78002	2-	2	2	2=	2	2	2=	
12.	OK 78047	2	2-	2	2=	2-	12-	2=	
13.	OK 754615A	S	S	S	S	S	S	S	
14.	OK 80099	2	2-	2	:1,2=	:2-	2-;	2-	
15.	OK 77198	..	S	2	2	..	..	S	17,7b
16.	TX 71A889	..	S,;	2	0;	..	..	-	17,Seg.6
17.	TX 78V2154	2	2	2	2	23	23	2	24
18.	TX 78V3562	2	S	2	2	S,X-N	S	2	
19.	TX 79A2729	S	S	2	2	S	2	2	
20.	TX 73V862	..	..	2	..	:23CN	..	2CN	6,17
21.	TX 73V1241	:1	S	2	S	:1N	:1	S	17
22.	CO 778766	S	S	S	S	S	S,;1	S	
23.	CO 778785	..	..	S	..	S	..	S	6
24.	CO 779274	S	S	S	S	S	S	23C	
25.	CO 710125	S	S	S	2	2	2	2+	
26.	CO 786741	..	..	S	0;	S	..	2	6
27.	CO 786747	0;	..	S	0;	X	..	S	6
28.	NK 77W4036	:1	S	S	2	0;	:1N	S	17
29.	NK 77W4430	..	..	2-	..	..	..	12C	6,17
30.	NAPB 200	..	..	2	..	23	..	23	6,24
31.	NAPB 201	..	..	S	..	S	..	S	6
32.	NAPB 203	..	..	S	..	S	..	S	6
33.	NAPB 204	..	..	S	..	32	..	2+	6
34.	L.S. No.3	..	S	2	2	..	..	S	17

Table 1. Chemical, Milling, and Breadmaking Data for the Southern Regional Performance Nursery Composites of Hard Winter Wheat Varieties Harvested in New Mexico, Texas, Oklahoma, Missouri, Kansas, Colorado, Iowa, Nebraska, South Dakota, and Idaho in 1981. 1/ 2/

Variety	C.I. or Sel. No.	Wheat				Flour				Dough Mix Time-- min	Loaf Volume	
		Wt. Per Bu. lbs	Ash %	Pro- tein %	Flour Yield %	Ash %	Pro- tein %	Ab- sorp- tion %	As Rec'd cc		Corrected To 12.5% Protein cc	
Kharkof	1442	60.3	1.56	13.9	74.8	0.43	12.9	58.4	2 7/8	1003	975	
Scout 66	13996	60.9	1.46	13.3	75.9	.39	12.5	57.1	3	973	973	
Sage	17277	60.5	1.47	13.5	75.5	.39	12.6	58.4	2 7/8	978	971	
Mara/2*Scout//Sentinel	NE74649	59.0	1.50	13.6	75.6	.39	12.7	58.9	5 1/8	978	964 5/	
NE69475/2/Ctk/Gage Sel.	NE75424	61.6	1.49	13.5	76.1	.39	12.6	59.5	4 3/4	968	961 5/	
Wrr*5/Agent//NE68457/3/Ctk 78	NE77682	60.8	1.46	13.0	77.4	.40	12.3	58.2	4 1/4	925	938 5/	
Centura												
(Wrr*5/Agent)*2/Kavkaz Siouxland	NE78668	60.1	1.48	13.0	75.2	.41	12.3	57.2	3 3/8	947	961 5/	
CIMMYT/Scout	KS75210	61.7	1.50	14.1	74.5	.41	13.1	60.1	3 1/4	1035	991 5/	
Sage/Arthur	KS79H70	59.2	1.52	14.1	75.7	.42	13.2	57.6	3 1/2	1008	959 5/	
"												
TAM W-101/Amigo	KS79H69	58.9	1.54	13.8	74.8	.42	13.0	56.7	3 1/2	980	946 5/	
Payne/Amigo	OK78002	60.0	1.54	12.5	75.1 4/	.44	11.8	60.8	3 1/4 (3 1/8)	953	1005 5/	
	OK78047	60.9	1.54	13.0	75.4 4/	.44	12.2	57.0	2 1/4 Q-U	930	951	
Ey Sdy/Ncm	OK754615A	61.2	1.53	13.3	75.1 4/	.42	12.5	58.8	4 1/4	990	990 5/	
Payne/2/TAM W-101/Amigo	OK80099	59.5	1.54	13.9	73.6 4/	.46	13.2	59.7	2 3/4	1015	966 5/	
Osage Sib/Ey Sdy	OK77198	61.0	1.54	13.6	75.1	.46	12.6	62.0	2 5/8 Q	1032	1024	
Sdy Sib/Tascosa/Ctk	TX71A889	61.6	1.45	12.6	75.8	.41	11.8	58.1	3 3/4 (3 3/8)	943	994 5/	
69A509-2/2/Blue Boy II/Fox	TX78V2154	59.2	1.46	13.2	74.4 4/	.42	12.3	57.4	2 7/8	990	1005 5/	
69A2712-6/2/Agent/Tcs	TX78V3562	59.7	1.59	13.7	74.8	.41	12.7	58.0	3 1/8	1030	1015 5/	
TAM W-103/KS73167	TX79A2729	61.1	1.46	13.1	74.3 4/	.40	12.1	60.6	3 1/4	975	1005 5/	
65A1664/Centurk	TX73V862	60.4	1.49	12.9	74.8	.39	12.0	58.8	4 3/4	950	986 5/	
62A2522-1/Centurk	TX73V1241	61.1	1.44	13.1	76.2	.39	12.1	58.8	4 1/8	975	1005 5/	
C0702078/C0701631		59.7	1.53	12.5	75.0	.39	11.8	53.1 Q	4 (3 3/8)	941	992 5/	
"		58.8	1.54	12.9	75.0	.39	12.0	57.8	6 Q-U	955	991	
C0702179/C0701467		60.5	1.53	13.3	75.1	.40	12.7	64.6	6 Q-U	1025	1010	

8400086

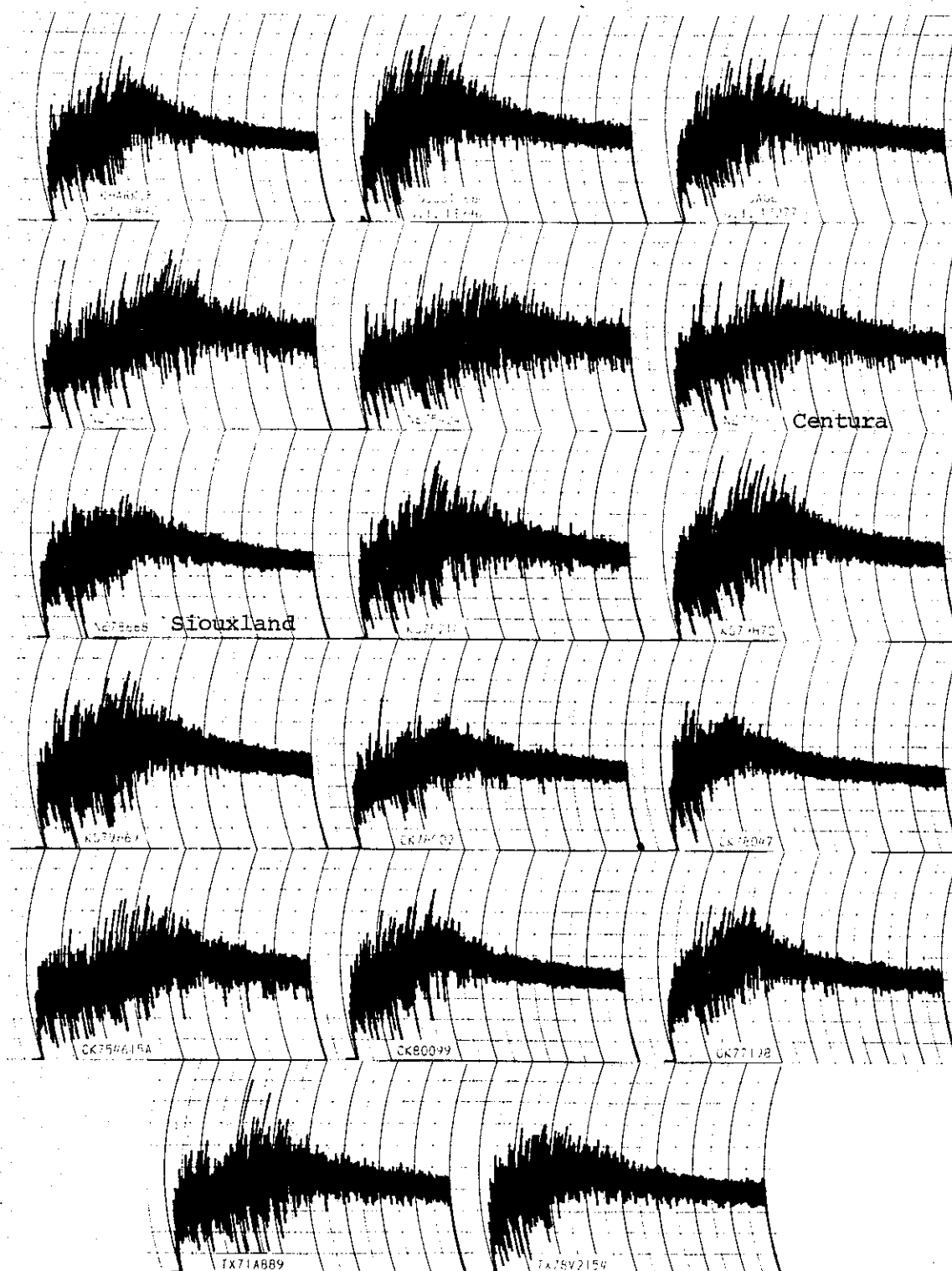


Fig. 1. Mixograms (10 g flour) for the Southern Regional Performance Nursery composites of hard winter wheat varieties harvested in New Mexico, Texas, Oklahoma, Missouri, Kansas, Colorado, Iowa, Nebraska, South Dakota, and Idaho in 1981. Mixing time is the time (min) to the peak (point of minimum mobility). Mixing tolerance is the slope and width after the peak and stability of mixogram height on either side of the peak. Major arcs are at 1-min intervals.

Table I. Chemical, Milling, and Bread-Making Data for the Southern Regional Performance Nursery Composites of Hard Winter Wheat Varieties Harvested in New Mexico, Texas, Oklahoma, Missouri, Kansas, Colorado, Iowa, Nebraska, and South Dakota in 1982. 1/ 2/

Variety	C.I. or Sel. No.	Wt. Per Bu.	Wheat			Flour			Bake Mix Time <sup>3/</sup>			Loaf Volume		
			Ash	Pro- tein	Flour Yield	Ash	Pro- tein	Ab- sorp- tion	As Rec'd	min	12.0% Protein Basis	As Rec'd	cc	11.5% Protein Basis
			%	%	%	%	%	%						
Kharkof	1442	59.4	1.64	13.6	73.3	0.42	12.3	58.0	3½	-	-	960	903	
Scout 66	13996	60.9	1.44	12.5	77.3	.42	11.7	58.3	3½	3½		913	899	
Sage	17277	60.9	1.50	13.0	74.2	.39	11.8	58.9	3½	3½		905	884	
Ey Sdy/Ncm	OK754615A	60.9	1.63	12.3	76.3 4/	.45	11.4	57.4	5½	4½ Q		964	972 5/	
" "	OK754615E	60.9	1.59	12.5	75.3	.42	11.4	58.9	5½	4½ Q		945	953 5/	
Aurora/2*TAM W-101	OK79257	59.7	1.55	12.9	75.7	.43	11.7	60.5	2½	2½		935	920	
" "	OK79256	60.4	1.52	12.8	75.7	.42	11.7	60.5	2½	2½		918	904	
" "	OK79259	60.2	1.57	12.8	76.5	.42	11.8	59.4	2½	-		910	889	
TAM W-103/KS73167	TX79A2729	60.3	1.52	12.2	74.8	.44	11.3	58.9	3½	3½		939	954 5/	
Sdy sib/KAW(TX62A2522-1)//Ctk	TX78V3630	60.2	1.52	12.5	74.3	.45	11.4	58.6	1½	1½ U		907	914	
TAM W-101/Ctk(TX71A58-3)														
//Amigo	TX80A5879	60.5	1.59	11.8	71.7	.49 Q	11.0	60.4	2½	2½ Q		893	930	
Sh Wh/Sut(TX69A509-2)//Fox	TX78V2408	58.9	1.55	12.3	74.9	.44	11.1	58.8	4½	3½		923	954 5/	
TAM W-101/Ctk(TX71A58-3)														
//Amigo	TX80A5904	59.5	1.57	11.8	73.9	.45	10.6	56.9	3½	2½		903	974	
Sdy sib/Triumph//Ctk	TX71A562-6-28	58.5	1.53	11.8	75.4	.42	10.8	54.4 Q	2½	2½ Q		878	930	
Era/TAM W-101	TX78AV3098	59.6	1.49	13.0	77.4	.48	12.0	58.6	4½	-		967	930 5/	
TAM 105*4/Amigo	TXGH2875	59.5	1.43	12.0	75.7	.43	11.2	61.2	4½	4		963	987 5/	
Arkan	KS79H69	59.2	1.51	13.0	76.0	.45	12.0	56.9	3½	-		993	955	
72F30620/Baca	CO786741	60.9	1.54	12.8	77.2	.42	11.9	58.6	3½	-		940	911 5/	
CO723117/CO725856	CO796272	61.3	1.44	12.0	75.9	.39	11.1	58.6	4½	3½		893	922 5/	
" "	CO796326	61.4	1.47	12.2	76.8	.39	11.2	58.8	5	4½		913	935 5/	
" "	CO796386	61.6	1.51	12.6	76.0	.39	11.7	59.0	4½	4½		970	955 5/	

8400086

Table I. (cont.) page 2

Variety	C.I. or Sel. No.	Wt. Per Bu.	Wheat			Flour			Bake Mix Time <sup>3/</sup>			Loaf Volume		
			Ash	Pro- tein	Flour Yield	Ash	Pro- tein	Ab- sorp- tion	As Rec'd	12.0% Protein Basis	As Rec'd	11.5% Protein Basis		
													%	%
Scout*5/Ag//Sdy/3/Ctk	NK77W4093	60.9	1.52	12.8	73.9	4/ 0.42	11.7	59.6	2½	2½	Q-U	938	923	
Scout*5/Ag//Sdy	NK77W4505	59.9	1.56	13.2	75.7	.44	12.2	57.8	4½	-	-	960	910 5/	
Kavkaz/Centurk	NK77W4593	60.7	1.56	13.5	75.5	.42	12.6	57.6	3½	-	-	955	880	
Wrr*5/Agent//NE68457/31Ctk78	Centura NE77682	59.9	1.43	12.9	74.7	.41	11.8	58.7	4½	4½	-	915	894 5/	
(Wrr*5/Agent)*2/Kavkaz	Siouxland NE78668	60.4	1.50	12.5	75.8	.40	11.5	58.3	3½	3½	-	910	910 5/	
Sn/Tpr//Wrr/31118889/Tpr														
//CO652643	NA-361 S5	60.3	1.50	12.1	76.2	.40	10.9	58.6	4½	3½	-	918	965 5/	
CIMMYT/CO652643//Lcr/3/														
KS62/CO695552	NA-3679	61.1	1.55	12.0	74.9	.40	10.8	57.1	3½	2½	-	908	963 5/	
1118889/Tpr/CO652643/31Baca	W-391SH	57.5	1.50	12.3	74.5	.43	11.1	57.1	4½	4½	-	895	924 5/	
" " " " "	W-391R11	59.8	1.52	12.1	76.4	.43	11.2	57.9	5½	5	Q	868	889 5/	
Sage Outcross	LS No. 3	61.6	1.57	13.2	76.9	.39	12.1	57.6	3	-	-	928	887	
Ctk//KS6623/TX62A2522-8-2	IL76-3845	59.2	1.49	12.6	76.2	.42	11.7	55.3	Q	2½	Q	892	878	
Kavkaz/TX69A330-1	IL77-4259	60.6	1.53	13.6	75.3	.43	12.6	57.5	1½	U	-	914	844 Q-S	
HW1010	RH790610	60.4	1.52	12.2	75.1	.39	11.2	59.4	3½	3½	-	945	969 5/	

1/ Data expressed on a 14% moisture basis.

2/ S, Q, and U - Satisfactory, questionable, and unsatisfactory quality with respect to property in question.

A satisfactory rating is inferred in the absence of a designated one. One unsatisfactory rating, in general, characterizes a variety as undesirable for hard wheat milling and breadmaking purposes. Crumb grains and colors were satisfactory for all entries except for the Q-S crumb grains of TX78V3630 and NK77W4593, and the Q crumb grain and color of IL77-4259.

3/ Mixing time used in baking is evaluated in conjunction with other mixing properties obtained from the 10-g mixogram.

4/ Softer than average hard wheat milling properties but entirely satisfactory.

5/ Promising overall functional (milling and bread-making) properties.

8400086

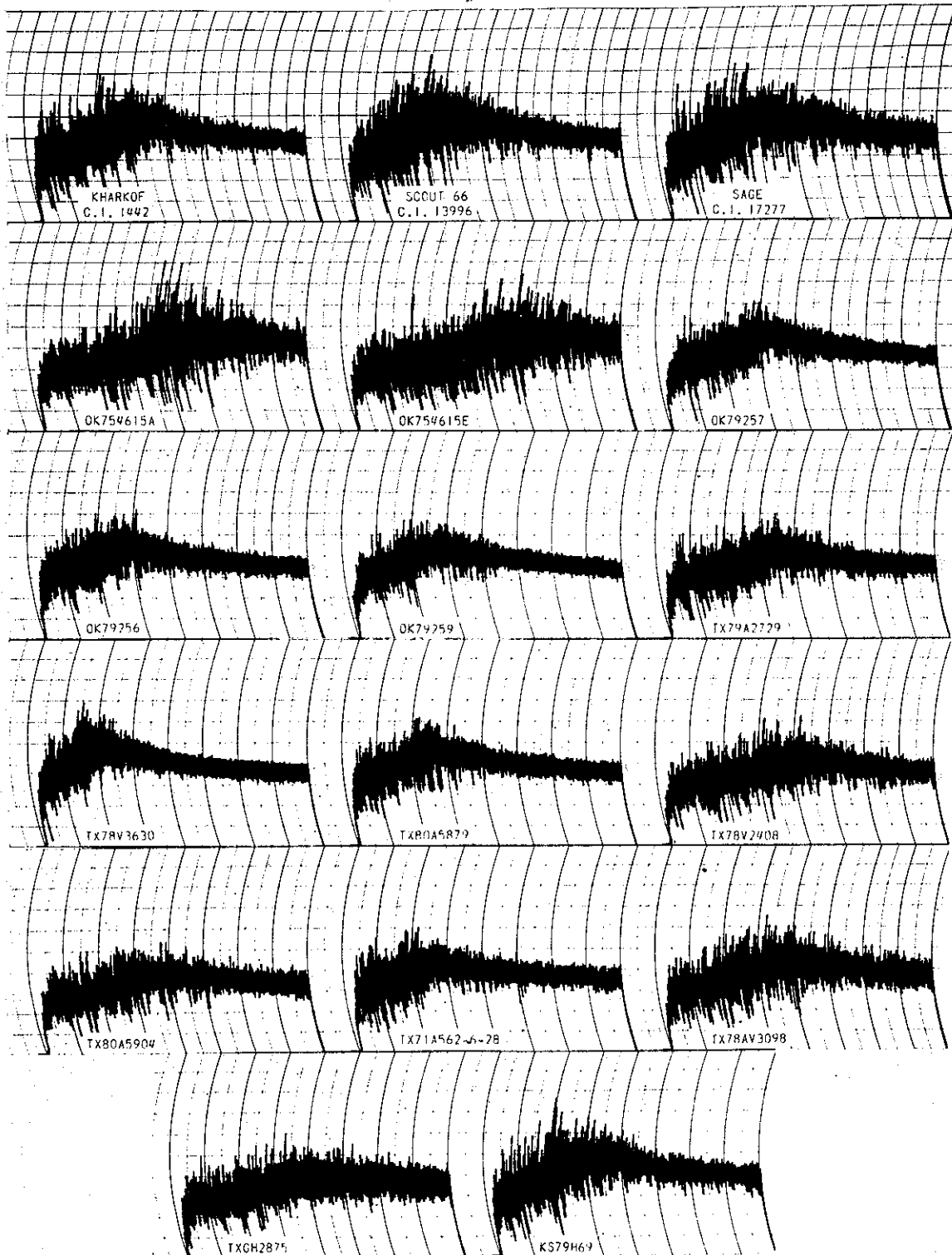


Fig. 1. Mixograms (10 g of flour) for the Southern Regional Performance Nursery composites of hard winter wheat varieties harvested in New Mexico, Texas, Oklahoma, Missouri, Kansas, Colorado, Iowa, Nebraska, and South Dakota in 1982. Mixing time is the time (min) to the peak (point of minimum mobility). Mixing tolerance is the slope and width after the peak and stability of mixogram height on either side of the peak. Major arcs are at 1-min intervals.

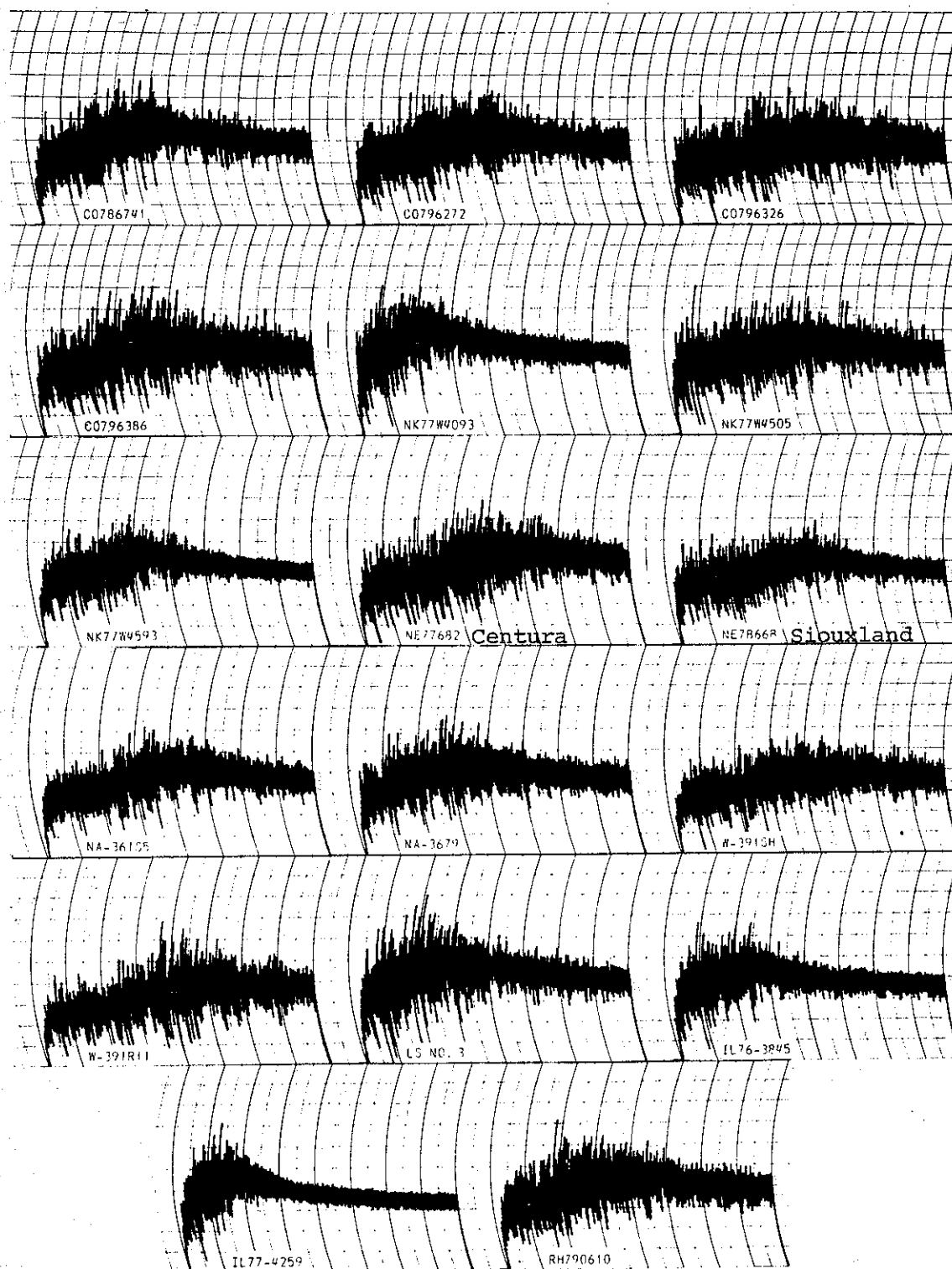


Fig. 2. Mixograms (10 g of flour) for the Southern Regional Performance Nursery composites of hard winter wheat varieties harvested in New Mexico, Texas, Oklahoma, Missouri, Kansas, Colorado, Iowa, Nebraska, and South Dakota in 1982. Mixing time is the time (min) to the peak (point of minimum mobility). Mixing tolerance is the slope and width after the peak and stability of mixogram height on either side of the peak. Major arcs are at 1-min intervals.

Table 1. Chemical, Milling, and Bread-Making Data for the Southern Regional Performance Nursery Composites of Hard Winter Wheat Varieties Harvested in Colorado, Idaho, Iowa, Kansas, Missouri, Nebraska, New Mexico, Oklahoma, South Dakota, and Texas in 1983. 1/ 2/

Variety	C.I. or Sel. No.	Wheat				Flour			Dough Mix Time 3/			Loaf Volume	
		Wt. Per Bu.	Ash %	Pro- tein %	Flour Yield %	Ash %	Pro- tein %	Ab- sorp- tion %	As Rec'd min	Corrected to 12.0% Protein min	As Rec'd cc	Corrected to 12.0% Protein cc	
Kharkof	1442	58.6	1.71	13.1	71.0	0.44	12.0	56.6	3 7/8	-	953	953	
Scout 66	13996	60.7	1.55	13.1	74.2	.41	12.1	56.0	3 1/4	-	943	936	
Sage	17277	60.1	1.61	13.8	74.1	.42	12.6	56.4	3 3/8	-	950	909	
Sdy Sib/Kaw (TX62A2522-1)/2/Ctk	TXV3630	60.0	1.58	12.7	72.1 4/	.45	11.5	54.0	2 5/8	2 1/4 Q	902	937	
Short Wheat/Sut (TX69A509-2)/2/Fox	TX78V2408	59.0	1.57	12.4	74.3	.45	11.5	54.7	4 1/8	3 3/8	920	956 5/	
Sdy Sib/Triumph /2/Ctk	TX71A562-6-28	58.1	1.59	12.0	75.5 4/	.45	11.1	51.5 Q	3 1/4	2 1/8 Q-S	860	922	
Tam 105*4/Amigo	TXGH2875	59.2	1.47	12.1	75.7 4/	.44	11.2	56.8	4 1/4	3 3/8	965	1030 5/	
Arkan	KS79H69	60.0	1.57	13.3	76.7	.46	12.2	54.4	3 3/4	-	933	919	
Scout*5/Ag/2/													
Sdy/3/Ctk	NK77W4093	61.2	1.57	13.0	73.2	.46	12.0	55.2	2 1/4 Q	-	935	935	
Scout*5/Ag/2/Sdy	NK77W4505	60.3	1.59	13.3	74.4	.49	12.5	56.5	4 1/4	-	987	951 5/	
Kavkaz/Centurk	NK77W4593	60.8	1.64	13.7	74.8	.45	12.8	54.7	3 5/8	-	940	888 Q	
Centura	NE77682	60.3	1.56	13.1	76.4	.47	12.2	55.9	4 1/4	-	935	921	
(Wrr*5/Agent)*2/Kavkaz	Siouxland NE78668	60.2	1.59	12.6	75.9	.47	11.9	54.9	3 3/4	3 1/4	918	925 5/	
Lovrin 13/2*Ctk 78	NE80413	60.4	1.65	12.8	74.3	.47	11.7	54.8	3 3/8	3 1/4	873	893 Q	
Colt	NE78696	60.2	1.66	12.6	74.0	.44	11.8	53.4	3 3/8	3 1/4	923	937	
CO73F18298-6/													
McNair 4823	NA80137	60.1	1.64	13.0	71.5 4/	.44	11.6	55.4	3 7/8	3 3/8	918	947 5/	
Bulk Sel.	NA80310	58.2	1.60	13.0	75.3	.46	12.1	55.7	5 1/4	-	927	920 5/	
Bulk Sel.	NA80300	59.6	1.62	12.6	74.5	.47	11.8	56.9	6	5 1/4 Q	942	957	
Caprock/B86/2/SC3212	W7442B	61.1	1.68	12.9	75.0	.47	11.9	53.9	3 3/8	3 3/8	973	981 5/	
Sturdy/B48/2/Sturdy	W7452B	59.9	1.69	12.7	73.7 4/	.54	12.6	55.0	3 1/4	-	995	952 5/	
Tam 105 Resel.	TX69A569-1-69	59.5	1.53	12.1	70.3 4/	.41	10.8	55.5	4 1/4	3 7/8	917	1012	

8400086

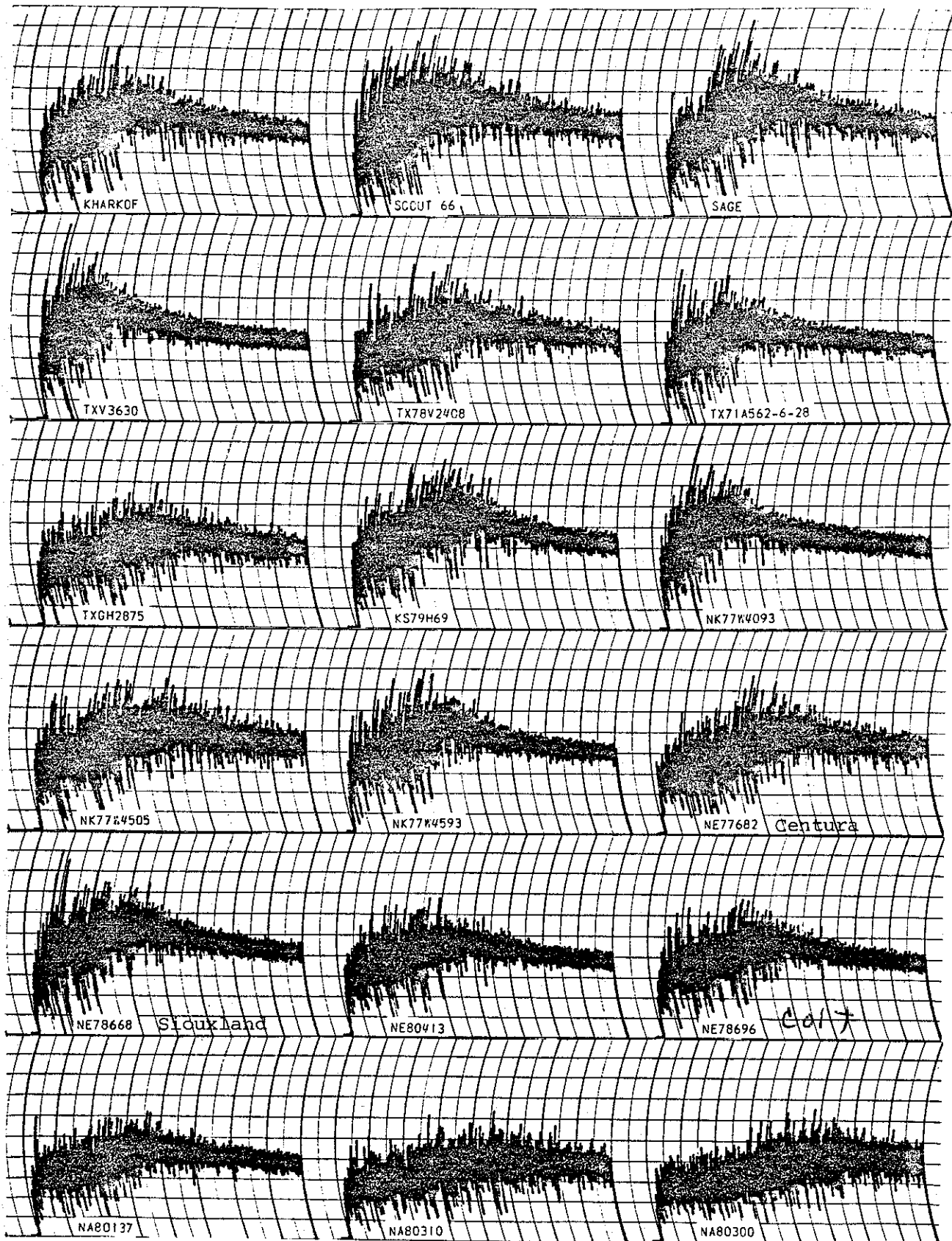


Fig. 1. Mixograms (10 g of flour) for the Southern Regional Performance Nursery composites of hard winter wheat varieties harvested in Colorado, Idaho, Iowa, Kansas, Missouri, Nebraska, New Mexico, Oklahoma, South Dakota, and Texas in 1983. Mixing time is the time (min) to the peak (point of minimum mobility). Mixing tolerance is the slope and width after the peak and stability of mixogram height on either side of the peak. Major arcs are at 1-min intervals.

OBJECTIVE DESCRIPTION OF VARIETY  
WHEAT (TRITICUM SPP.)

INSTRUCTIONS: See Reverse.

NAME OF APPLICANT(S) Board of Regents, Univ. of Nebraska USDA/Agricultural Research Service	FOR OFFICIAL USE ONLY PVPO NUMBER 8400086
ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code) Lincoln, NE 68508 Washington, DC 20250	VARIETY NAME OR TEMPORARY DESIGNATION Centura

Place the appropriate number that describes the varietal character of this variety in the boxes below.  
Place a zero in first box (e.g.,  or ) when number is either 99 or less or 9 or less.

## 1. KIND:

 1 = COMMON    2 = DURUM    3 = EMMER    4 = SPELT    5 = POLISH    6 = POULARD    7 = CLUB

## 2. TYPE:

 1 = SPRING    2 = WINTER    3 = OTHER (Specify) \_\_\_\_\_  1 = SOFT    3 = OTHER (Specify) \_\_\_\_\_  
2 = HARD 1 = WHITE    2 = RED    3 = OTHER (Specify) \_\_\_\_\_

## 3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:

 meaningless in winter wheat  
FIRST FLOWERING LAST FLOWERING

## 4. MATURITY (50% Flowering):

 NO. OF DAYS EARLIER THAN .....  1 = ARTHUR    2 = SCOUT    3 = CHRIS  
 NO. OF DAYS LATER THAN .....  4 = LEMHI    5 = NUGAINES    6 = LEEDS

## 5. PLANT HEIGHT (From soil level to top of head):

 \* regional data: 88 cm and 7 cm shorter than Scout  
CM. HIGH Nebraska (Mead 1983): 112 cm and 10 cm shorter than Scout CM. TALLER THAN .....  1 = ARTHUR    2 = SCOUT    3 = CHRIS  
 CM. SHORTER THAN .....  4 = LEMHI    5 = NUGAINES    6 = LEEDS

## 6. PLANT COLOR AT BOOTING (See reverse):

 1 = YELLOW GREEN    2 = GREEN    3 = BLUE GREEN

## 7. ANTHUR COLOR:

 1 = YELLOW    2 = PURPLE

## 8. STEM:

 Anthocyanin: 1 = ABSENT    2 = PRESENT Waxy bloom: 1 = ABSENT    2 = PRESENT Hairiness of last internode of rachis: 1 = ABSENT    2 = PRESENT Internodes: 1 = HOLLOW    2 = SOLID NO. OF NODES (Originating from node above ground) CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW (based on Nebraska data)

## 9. AURICLES:

 Anthocyanin: 1 = ABSENT    2 = PRESENT Hairiness: 1 = ABSENT    2 = PRESENT

## 10. LEAF:

 Flag leaf at booting stage: 1 = ERECT    2 = RECURVED  
3 = OTHER (Specify): \_\_\_\_\_ Flag leaf: 1 = NOT TWISTED    2 = TWISTED Hairs of first leaf sheath: 1 = ABSENT    2 = PRESENT Waxy bloom of flag leaf sheath: 1 = ABSENT    2 = PRESENT MM. LEAF WIDTH (First leaf below flag leaf) CM. LEAF LENGTH (First leaf below flag leaf)

## 11. HEAD:

Density: 1 = LAX 2 = DENSE 3 = middense  Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE  
 4 = OTHER (Specify) tapering to clavate  
 some tendency towards square-headedness

Awedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED

Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED  
 5 = BROWN 6 = BLACK 7 = OTHER (Specify): \_\_\_\_\_

CM. LENGTH (actual average 6.4)   MM. WIDTH (actual average 9.8)

## 12. GLUMES AT MATURITY:

Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.) 3 = LONG (CA. 9 mm.)  Width: 1 = NARROW (CA. 3 mm.) 2 = MEDIUM (CA. 3.5 mm.)  
 3 = WIDE (CA. 4 mm.)

/ 1 = glabrous 2 = pubescent

Shoulder 1 = WANTING 2 = OBLIQUE 3 = ROUNDED beaks moderately short  
 shape: 4 = SQUARE 5 = ELEVATED 6 = APICULATE  Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE  
square to rounded

## 13. COLEOPTILE COLOR:

1 = WHITE 2 = RED 3 = PURPLE

## 14. SEEDLING ANTHOCYANIN:

1 = ABSENT 2 = PRESENT

## 15. JUVENILE PLANT GROWTH HABIT:

1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

## 16. SEED:

Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL  Cheek: 1 = ROUNDED 2 = ANGULAR

Brush: 1 = SHORT 2 = MEDIUM 3 = LONG  Brush: 1 = NOT COLLARED 2 = COLLARED

Phenol reaction 1 = IVORY 2 = FAWN 3 = LT. BROWN  
 (See instructions): 4 = BROWN 5 = BLACK

Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify) \_\_\_\_\_

actual 6.3 MM. LENGTH   actual 2.8 MM. WIDTH   GM. PER 1000 SEEDS

## 17. SEED CREASE: 4 = similar to Scout

Width: 1 = 60% OR LESS OF KERNEL 'WINOKA'  
 2 = 80% OR LESS OF KERNEL 'CHRIS'  
 3 = NEARLY AS WIDE AS KERNEL 'LEMHI'

Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT'  
 2 = 35% OR LESS OF KERNEL 'CHRIS'  
 3 = 50% OR LESS OF KERNEL 'LEMHI'

## 18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant) 3 = moderately resistant

STEM RUST (Races)  LEAF RUST (Races)  STRIPE RUST (Races)  LOOSE SMUT

POWDERY MILDEW  BUNT  OTHER (Specify) \_\_\_\_\_

## 19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant) 3 = moderately resistant

SAWFLY  APHID (Bydv.)  GREEN BUG  CEREAL LEAF BEETLE

OTHER (Specify) \_\_\_\_\_ HESSIAN FLY RACES:  GP  A  B  C  
 D  E  F  G

## 20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	Centurk	Seed size	Scout
Leaf size	Centurk (but shorter &	Seed shape	Scout
Leaf color	Centurk narrower)	Coleoptile elongation	Centurk
Leaf carriage	Centurk	Seedling pigmentation	Centurk

## INSTRUCTIONS

**GENERAL:** The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

- (a) L.W. Briggie and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.
- (b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. (See attachment.)

**LEAF COLOR:** Nickerson's or any recognized color fan should be used to determine the leaf color of the described variety.

## EXHIBIT D

## Description of Centura

Glumes of Centura are glabrous and have narrow, square to rounded shoulders. Kernels are red, elliptical with a medium-sized germ, a medium-length brush, not collared, with rounded cheeks, and a narrow and shallow crease.

Table 2. Spike and kernel measurements for Scout 66 and Centura.

	Spike length (cm)	Spike width (mm)	Awn length (cm)	Beak length (mm)	Glume length (mm)	Glume width (mm)	Kernel length (mm)	Kernel width (mm)	1000- KW (grams)
Scout 66	7.1	8.1	6.2	2.2	7.9	3.7	6.5	2.7	34
Centura	6.4	9.8	6.7	2.9	8.6	3.2	6.3	2.8	33

## EXHIBIT E

## Statement of the Basis of the Applicant's Ownership

Centura hard red winter wheat is a product of the cooperative state-federal breeding program located in the Nebraska Agricultural Experiment Station. The breeders were Dr. John W. Schmidt and Dr. Virgil A. Johnson, employees of the Nebraska AES (Department of Agronomy) and the Agricultural Research Service, USDA (stationed and functioning also as a staff member in the Department of Agronomy), respectively.

By established policy, release of cultivars developed by the Nebraska Agricultural Experiment Station is the responsibility of the Nebraska AES as the agency providing staff, funds, and facilities for the breeding program.



United States  
Department of  
Agriculture

Agricultural  
Marketing  
Service

Warehouse  
and Seed  
Division

National Agricultural  
Library Building  
Beltsville, MD. 20705

April 24, 1984

8400086

PLANT VARIETY PROTECTION OFFICE

Gentlemen:

Subject: Application No. 8400086  
Variety and Kind: 'Centura' Wheat

As provided in section 83(a) of the Plant Variety Protection Act, 7 U.S.C. 2321, we request that the Certificate on the above variety be issued with a notation on the Certificate that the right to exclude others from selling, offering for sale, reproducing, importing or exporting the variety covered by this Certificate, or using it in producing a hybrid or different variety is waived, except that this waiver shall not apply to breeders seed, foundation seed, labeling requirements, and blending limitations.

It has been agreed that the Certificate should be issued in the name(s) of:

The Board of Regents, The University of Nebraska

July 2, 1984  
(Date)

John W. Goebel  
by (Signature) by Kim Phelps, Asst. to Vice Chm.  
John W. Goebel, Vice Chancellor for Business & Finance  
The University of Nebraska - Lincoln